

Maintenance 202

Field-device asset management

- Overview
- System requirements
- Intelligent field devices
- Open communication protocols
- Integrated monitoring and maintenance

Overview

If I want to improve field device maintenance through asset management, what do I need?

As the preceding course explained, process instrumentation consumes a large portion of maintenance budgets — as much as 14% of the value of goods sold.

Asset management controls these costs by properly maintaining field devices for maximum performance and extended service life at minimal cost. A good field-device **asset management system** assists in troubleshooting, provides predictive diagnostics, supports decision-making, and automatically documents all maintenance activities.

Hint: As you go through the topics in this course, watch for answers to these questions:

- *What general types of information can intelligent devices provide?*
- *What protocols are typically used, and where is information delivered?*
- *What functions must be integrated in an online asset monitoring and maintenance system?*

System requirements

An asset management system must **integrate diverse technologies and processes** that have different data collection and data processing requirements — and make them work together to improve maintenance and reduce costs.

In particular, it must **monitor early warning signs** of field device stress or deterioration so corrective action can be taken before a serious failure occurs. At the same time, it must enable maintenance personnel to **determine which devices need work** and which don't.

Finally, there must be **open communications** between the asset management system and the plant's computerized maintenance management system (CMMS) to allow seamless workflow and work tracking.

To meet these requirements, a field-device asset management system must include

- Intelligent field devices
- Open communication protocols
- Integrated monitoring and maintenance software

Let's look at each of these in more detail.

Intelligent field devices

A field-device asset management system taps the wealth of **diagnostic and other information** available in intelligent field devices. It uses that information to reduce the high cost of instrument maintenance while simultaneously lowering the risk of unwanted downtime.

The information is available because modern field devices can do much more than simply measure or control flow, pressure, temperature, or level. They have significant on-board computing power that enables them to provide information about their health and operational status.

Some intelligent devices can also report on the condition of related equipment or monitor process performance. In some cases they can even assess the potential operational impact of a problem and advise the operator if production may be affected.

The PlantWeb advantage

As part of PlantWeb architecture, Emerson provides the industry's most complete line of intelligent HART and FOUNDATION fieldbus devices -- with the richest diagnostics capabilities available.



Open communication protocols

Open, **standards-based** communication protocols make it easier to integrate the components of an asset management system with each other and with other plant and business systems — without getting "locked in" to a single supplier's equipment that depends on a proprietary protocol.

Communication protocols such as HART and FOUNDATION fieldbus are capable of transmitting digital information from transmitters, valve positioners, and other field devices on the same communications media used for process information.

The information can be sent to a dedicated PC in the maintenance shop or operator display in the control room. Communications by Internet, cell phone, and pager can also make information available to a variety of users outside the maintenance shop or even the physical plant.

The PlantWeb advantage

PlantWeb supports both HART and FOUNDATION fieldbus device communications.

PlantWeb also supports secure Internet communications, as well as integration with other communications methods including cell phone, pagers, and satellite communications.



Integrated monitoring and maintenance software

Online access to and monitoring of field devices are essential elements of advanced asset management software.

The software enables process and maintenance engineers to look **inside** the process to see how well production equipment is operating and whether critically important field devices are reporting signs of trouble. It can be configured to monitor for certain device characteristics, such as the limits of valve travel or temperature that — if exceeded — indicate potential problems in the process or the instrument.

Other important features of asset management software include:

- **A complete database** of all devices in the plant, including configuration specifications, locations, and repair histories
- **Graphic displays** enabling maintenance personnel to use the collected information for a variety of routine maintenance tasks
- **Diagnostic capabilities** allowing troubleshooting from the comfort and safety of the instrument shop

